

CLAIMS

What is claimed is:

1. A packaged optical device, comprising:
 - a header having a base plate;
 - a photonic device mounted to said header, said photonic device having a first optical axis; and
 - a cap mounted to said header, said cap comprising a body and a lens, having a second optical axis, mounted to said body, said cap being mounted to said header by at least one weld point as said lens is positioned relative to said photonic device so that said first optical axis and said second optical axis are approximately aligned.
2. The packaged optical device of claim 1, wherein said photonic device is a laser.
3. The packaged optical device of claim 2, wherein said photonic device is a photo diode.
4. The packaged optical device of claim 1, further comprising a hermetic seal joining said cap to said base plate of said header.
5. The packaged optical device of claim 1, wherein said lens comprises a ball lens.

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6. The packaged optical device of claim 1, wherein said photonic device comprises an optical detector.

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7. A method of aligning a cap having a lens to a header holding a photonic device, the method comprising:

 a step for viewing said photonic device through said lens;

 a step for moving said cap relative to said header to position a first optical axis of said lens proximate a second optical axis of said photonic device;
and

 a step for mounting said cap to said header to hold said cap in alignment with said photonic device.

8. The method of claim 7, further comprising a step for hermetically sealing said cap to said header.

9. The method of claim 8, wherein said step for viewing comprises a step for viewing said photonic device by a video display system.

10. The method of claim 9, further comprising a step for overlaying a calibration pattern on said video display.

11. The method of claim 10, further comprising a step for moving said cap relative to said header until a center of said lens is within a preselected calibration distance of said photonic device.

12. The method of claim 7, wherein said step for moving said cap relative to said header comprises:

 a step for positioning said header for movement in at least two of an x-direction, a y-direction, and a z-direction;

 a step for positioning said cap for movement in at least two of an x-direction, a y-direction, and a z-direction; and

 a step for moving at least one of said header and said cap in at least one of an x-direction, a y-direction, and a z-direction.

13. The method of claim 7, wherein said step for mounting said cap comprises a step for welding said cap to said header at at least one point.

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14. An apparatus to align a cap having a lens with a first optical axis to a header holding a photonic device with a second optical axis, said apparatus comprising:

 a capture assembly adapted to hold said header having said photonic device, said capture assembly being movable relative to said cap;

 an arm configured to support said cap, said arm being adapted to support said cap without obstructing a view of at least a portion of said lens; and

 a visual display system adapted to depict a position of said cap relative to said photonic device as said capture assembly moves relative to said cap to align said first optical axis and said second optical axis.

15. The apparatus of claim 14, wherein said arm is adapted to apply pressure between said cap and said header.

16. The apparatus of claim 15, further comprising at least one welding system, said at least one welding system in electrical communication with said arm and said capture assembly.

17. The apparatus of claim 14, wherein said video display system comprises at least one camera and at least one video display.

18. The apparatus of claim 17, wherein said camera further comprises a zoom lens.

19. The apparatus of claim 17, wherein said video display system includes a video overlay including at least one calibration feature for determining when the photonic device is within a preselected alignment tolerance with the lens.

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